Task 1: `Topical`

Benson the Rabbit is attending pilot school!

He has n modules to complete, numbered from 1 to n. There are k topics in flying numbered from 1 to k. As Benson is new to flying, he starts with zero knowledge in each topic.

Each of these n modules have a knowledge requirement to complete them. In particular, to complete module i, Benson requires at least $r[i][j]$ knowledge of topic j for all topics j.

Completing a module also allows Benson to gain knowledge in some topics. After completing module i, he will gain $u[i][j]$ knowledge in topic j.

Formally, let Benson's knowledge in topic j be $p[j]$. Initially, $p[j] = 0$ for all j. He can only complete a module i if $p[j] \geq r[i][j]$ for every topic j. After completing module i, the value of $p[j]$ increases by $u[i][j]$ for each topic j.

Benson may complete the modules in any order, but each module may only be completed at most once. Help Benson determine the maximum number of modules he can complete.

Input format

Your program must read from standard input.

The first line of input contains 2 space-separated integers, n and k.

Then, n lines will follow. The i-th ($1 \leq i \leq n$) of these lines contains k spaced integers $r[i][1], r[i][2], \ldots, r[i][k]$, denoting the knowledge requirements to complete module i.

Another n lines follow. The i-th ($1 \leq i \leq n$) of these lines contains k spaced integers $u[i][1], u[i][2], \ldots, u[i][k]$, denoting the knowledge gained after completing module i.

Output format

Your program must print to standard output.

The output should contain one integer, the maximum number of modules Benson can complete.

The output should contain only a single integer. Do not print any additional text such as `'Enter a number'` or `'The answer is'`.

Subtasks

For all testcases, the input will satisfy the following bounds:

- $1 \leq n, k \leq 10^6$
- $n \cdot k \leq 10^6$
- $0 \leq u[i][j], r[i][j] \leq 10^9$ (for all $1 \leq i \leq n$ and $1 \leq j \leq k$).

Your program will be tested on input instances that satisfy the following restrictions:

Subtask	Marks	Additional Constraints
1	12	$n = 1$
2	28	$1 \leq n, k \leq 100$
3	21	$k = 1$
4	39	No additional restrictions

Sample Testcase 1

This testcase is valid for subtasks 2 and 4.

Input	Output
3 3 0 0 0 7 9 2 7 8 9 7 8 2 7 7 7 8 10 9	1

Sample Testcase 1 Explanation

Benson can only complete module 1, which has knowledge requirement $[0, 0, 0]$. After which, he gains 7, 8, 2 knowledge in each of the 3 topics, but $p = [7, 8, 2]$ is insufficient for him to complete any other module. Since no other sequence allows Benson to complete more than 1 module, the final answer is 1.

Sample Testcase 2

This testcase is valid for subtasks 2 and 4.

Input	Output
4 3 5 1 0 0 1 5 0 0 0 7 7 7 0 5 6 1 1 1 8 2 0 8 1 4	4

Sample Testcase 2 Explanation

Benson can complete all 4 modules in the order 3, 1, 2, 4.

With initial knowledge $p = [0, 0, 0]$, he can complete module 3 and his knowledge increases by $u[3] = [8, 2, 0]$.
With knowledge $p = [8, 2, 0]$, he can complete module 1 and his knowledge increases by $u[1] = [0, 5, 6]$.
With knowledge $p = [8, 7, 6]$, he can complete module 2 and his knowledge increases by $u[2] = [1, 1, 1]$.
With knowledge $p = [9, 8, 7]$, he can complete module 4 and his knowledge increases by $u[4] = [8, 1, 4]$.

Since Benson can complete all 4 modules, the answer is 4.

Sample Testcase 3

This testcase is valid for subtasks 2 and 4.

Input	Output
5 5 14 11 15 7 15 0 0 0 0 0 9 9 14 2 13 4 3 6 1 0 2 4 7 0 0 5 5 0 0 13 4 4 7 1 0 4 1 0 2 1 2 5 0 2 1 4 0 7 2 12	4

Sample Testcase 3 Explanation

Benson can only complete 4 modules in the order 2, 4, 5, 3.

With initial knowledge $p = [0, 0, 0, 0, 0]$, he can complete module 2 and his knowledge increases by $u[2] = [4, 4, 7, 1, 0]$.
With knowledge $p = [4, 4, 7, 1, 0]$, he can complete module 4 and his knowledge increases by $u[4] = [2, 5, 0, 2, 1]$.
With knowledge $p = [6, 9, 7, 3, 1]$, he can complete module 5 and his knowledge increases by $u[5] = [4, 0, 7, 2, 12]$.
With knowledge $p = [10, 9, 14, 5, 13]$, he can complete module 3 and his knowledge increases by $u[4] = [4, 1, 0, 2, 1]$.

With that, he has knowledge $p = [14, 10, 14, 7, 14]$ which is insufficient to complete any other module. Since no other sequence allows Benson to complete more than 4 modules, the final answer is 4.